MULTIMEDIA ⬛ UNIVERSITY

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2017/2018 SESSION

TCE 2311 – DATA COMMUNICATION AND NETWORKING
(All Sections / Groups)

6th MARCH 2018
9:00 am   -   11:00 am
(2 Hours)

INSTRUCTIONS TO STUDENTS
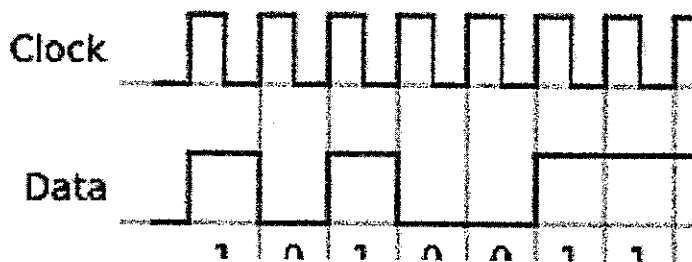
1. This Question paper consists of 5 printed pages including cover page with 6 questions only.

2. Attempt SIX out of SIX questions. All questions carry equal marks and the distribution of marks for each question is given.

3. Please write all your answer in the Answer Booklet provided.

Question 1 [10 marks]

(a) Explain how product standardization can lower the product cost to consumer.

[2 marks]

(b) Explain how product standardization can lower the development cost for product manufacturer.

[2 marks]

(c) In computer networking, why is it recommended for consumer to use standard-based product instead of proprietary product?

[4 marks]

(d) Give two IEEE standards for Local Area Network.

[2 marks]

Question 2 [10 marks]

(a) Explain why copper cables used in telecommunication are not straight but in twisted pair?

[2 marks]

(b) What is the benefit of individually shielded twisted pair cable?

[2 marks]

(c) In 100Base-FX, the line coding NRZI is used. Since NRZI has problem when a long string of zeroes are sent, explain why it is still used in 100Base-FX.

[3 marks]

(d) An MLT-3 interface emits less electromagnetic interference and requires less bandwidth than most other binary or ternary interfaces that operate at the same bit rate such as Manchester code or Alternate Mark Inversion. Below is the sample line coding for MLT-3. Explain how MLT-3 emits less EMI interference.

[3 marks]

Continued ....

Question 3 [10 marks]

(a) In a noisy channel, the number of voltage level is eight. The maximum channel capacity is 125 Kbps and the bandwidth is 50 Kbps. What is the SNR value in decibel?

[3 marks]

(b) A channel is using a frequency band of 110 kHz till 150kHz. What is the sampling frequency for the channel?

[2 marks]

(c) The bandwidth is 10khz and the number of signal level is 32. What is the maximum channel capacity in a noiseless channel?

[2 marks]

(d). What is the benefit of mixing PSK and ASK together?

[1 mark]

(e). Why is it not feasible to mix FSK with PSK or ASK?

[2 marks]

Question 4 [10 marks]

(a) Given a data-word 10101 101110 and the divisor value is 10111. What is the CRC value?

[3 marks]

(b) Error bit for the given string (the string consist of data + hamming code) is shown in example below.

Decimal value of the codeword	Bits															Error in bit
	15	14	13	12	11	10	9	8 R8	7	6	5	4 R4	3	2 R2	1 R1	
15000	0	1	1	1	0	1	0	1	0	0	1	1	0	0	0	12

Assuming that error occurs in those bits shown in the table, calculate the decimal value of the codeword. The decimal value must range from 11000 to 12000.

Fill in the blank in Decimal Value.

Decimal value of the codeword	Bits															Error in bit
	15	14	13	12	11	10	9	8 R8	7	6	5	4 R4	3	2 R2	1 R1	
																7
																8

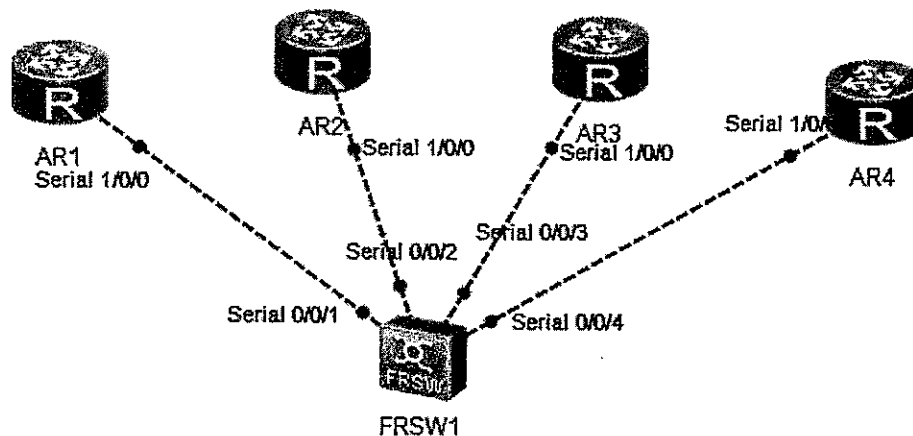(2 marks for each correct answer)

[4 marks]

Continued ....

(c) Give two situations when it is strongly recommended for a receiver to perform error correction on the received packets instead of requesting for retransmission.

[2 marks]

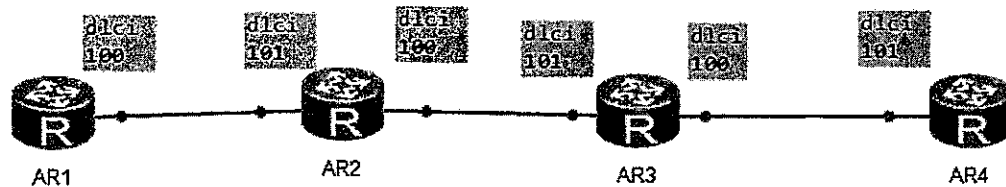(d) What can happen if spanning tree protocol is disable in a switch?

[1 mark]

Question 5 [10 marks]

(a) Below is the physical and logical topology of a network. Configure the frame relay connection table so that the logical topology can be implemented via existing physical topology.

Physical Topology. Sub interfaces are used in each router.

Logical Topology.

Continued ....

a) Fill in the blank. The frame relay connection table.

InDLCI	InPort	OutDLCI	OutPort

[4 Marks]

(b) Give three advantages of SDH over PDH.   [3 marks]

(c) Give one difference between T-carrier and E-carrier System.   [1 mark]

(d) How ATDM improve the efficiency of TDM?   [2 marks]

Question 6 [10 marks]

(a) How does long propagation delay affect the performance of Stop and Wait Protocol?
[2 marks]

(b)In Go-Back-N Protocol, the sliding (receiving) windows size is one. What is the limitation of this?   [3 marks]

(c) IEEE 802.11 FHSS uses Frequency-Hopping Spread Spectrum (FHSS). Explain how FHSS work?   [2 marks]

(d) What is NAV (Network Allocation Vector) in wireless LAN?

[3 marks]

End of Paper